



*Longwood University Interdisciplinary
MIDDLE SCHOOL
Teacher Preparation Model*

*Submitted to the
Virginia Department of Education, 2005*

Executive Summary

Recognizing that middle school teachers teach specific content area subjects without the requisite in-depth preparation through concentrated study provided to them in their teacher education programs, Longwood University responded to that need, reiterated by the middle school movement, and has created and developed a Middle-School-Only Teacher Education Licensure endorsement. Guided by the State Board of Education, NMSA, NCATE, SCHE, and other discipline specific governing agencies, Longwood offers an interdisciplinary program that boasts participation of faculty from both the College of Arts and Sciences and the College of Education and Human Services. The program is part of Longwood's continued effort to better prepare students for the teaching profession.

The Longwood University Liberal Studies Middle School Teacher Preparation Program has four components, *General Education*, the *Liberal Studies* major, *Pedagogy*, and *Field Experiences*. Each of the components plays a role in the development of effective practitioners. Each component is carefully constructed to prepare teacher candidates ready to help their students master the Virginia Standards of Learning.

Longwood's *General Education* program ensures that students in all majors experience liberal learning as a central part of their college studies. The program consists of 15 goals comprising 41 credit hours of both upper and lower level coursework, designed to develop disciplined, informed, and creative minds. Designating specific courses to meet general education requirements allows the overlapping of courses required for the Liberal Studies major. Students can take 12 -16 credits of their major

classes within general education, thereby shortening the overall curriculum by one semester, making a four year degree possible.

The *Liberal Studies Major* has been designed primarily for students seeking licensure to teach multiple subjects in Elementary, Middle, or Special Education. It provides a strong background in content areas such as Literature, Writing, Mathematics, Biology, Earth Science, History, Geography, and Government. Faculty from the College of Arts and Sciences have worked with Education Faculty to produce a major sequence of courses intended to develop broadly informed individuals who understand contemporary issues and will provide civic and professional leadership. The high level of cooperation between faculty from the College of Arts and Sciences and the College of Education and Human Services is a major factor in the continuing quality of this program. The Liberal Studies Teacher Preparation major has been in existence since its inception in 1992. The University and its faculty have had twelve years to develop and refine the process, now including the Middle School endorsement.

The *Pedagogical* component is designed to develop a well-rounded middle school practitioner. This component includes foundations and growth and development as well as an extensive examination of instructional methods and strategies. The pedagogical component also includes emphasis on assessment, media and technology, curriculum, classroom management, and exceptional learners. In each of these areas, a concerted effort is made to focus on and develop understanding of the Virginia Standards of Learning and the National Middle School Association Standards. Further, all Longwood University Liberal Studies Middle School endorsement students must take and pass Praxis II assessment for program graduation and licensure.

The *Field Experience* component immerses Longwood University teacher candidates in real-world classrooms from the beginning of the program to the end. A minimum of 60 hours of supervised experience in the public school setting marks both the freshman and sophomore years. These three week full-time experiences are held at the conclusion of the spring term. The junior year is marked by the partnership program, a semester long experience in a middle school with instruction in methods and management. Students receive their pedagogy courses on-site at a public middle school from Longwood University faculty, with half of each day spent in a middle school classroom where they can immediately apply new knowledge and information gained from coursework. Student teaching, in the senior year, features placements in the appropriate concentration areas.

The Longwood University Middle School Teacher Preparation Model

Acknowledgments

This model is the result of a concerted effort on behalf of many people. True to the curriculum model contained herein, faculty from both the College of Arts and Sciences and the College of Education and Human Services came together to study, create, and develop the issue of middle school teacher preparation into a model program that will better meet the needs of our students and service community. The resulting interdisciplinary model is only possible because of the interdisciplinary efforts of the faculty from the various disciplines within both colleges.

Longwood University Liberal Studies Middle School Model Team

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Preface

Longwood University was awarded a grant from the Virginia Department of Education, under the auspices of the Division of Teacher Education and Licensure, and the Office of Teacher Education and Teacher Quality Enhancement. The award supported Longwood University's continued efforts to study and develop a middle school interdisciplinary curriculum model that would continue the Longwood tradition of educating and preparing students for the teaching profession while complying with the No Child Left Behind (NCLB) Act of 2001. This document records the process which Longwood University undertook in order to complete that task and presents the resulting Middle School Teacher Education Curriculum Model.

Background

Middle School Education

Historically, much attention has been paid to the elementary and secondary levels of education: students must learn to read at the elementary level and show competency to graduate. This beginning and end concern, however, leaves much to be desired for what happens in middle school education. State learning standards everywhere, however, have necessitated a sustained focus on all levels of education, spanning pre-K to graduation. Consequently, in recent years educators began to focus on that middle time in students' education that had been so often overlooked. Born out of that focus and research, the middle school movement began to offer insights and recommendations to middle school educators.

Among the recommendations emerging from the middle school movement has been the call for pre-service teacher preparation that focuses on the unique challenges and

opportunities of teaching in the middle grades (National Middle School Association, 2003; Stepp, 2000). Two influential reports by the Carnegie Corporation, *Turning Points* (Carnegie Council on Adolescent Development, 1989) and the follow-up *Turning Points 2000* (Jackson & Davis, 2000) endorsed specialized preparation of middle school teachers, yet the research demonstrates the limited degree to which this recommendation is being carried out (Mizelle & McLaughlin, 1995). C. Kenneth McEwin and his colleagues have pointed out that fewer than one-fourth of middle school teachers have received specialized pre-professional training, a circumstance resulting from a combination of philosophical and practical factors (Dickinson & McEwin, 1997; McEwin, Dickinson, & Smith, 2003; Scales & McEwin, 1994). Historically, many state education licensure boards opted for overlapping certification ranges that allowed the middle grades to be covered by teachers whose primary pre-service training had centered upon either elementary or secondary teaching (Gaskill, 2002). Gaskill (2002) goes on to report that 44 states have more recently adopted special licensure and/or certification regulations for teachers placed in middle school settings. Yet, many teachers still hold M.S. licensure by virtue of holding K-8 or 6-12 licensure.

Research has shown positive impacts on teacher confidence and satisfaction with pre-service preparation among teachers with specialized training (Giebelhaus, 1998; Jackson & Davis, 2000; Scales & McEwin, 1994). While the impact of specialized training on student learning remains thinly researched, advocates of a middle grades focus effectively point to the broader educational literature. There is, for example, widely accepted research connecting the situated aspects of teachers' professional knowledge with student learning (Darling-Hammond & Bransford, 2005).

Prospective middle level teachers develop a deeper and broader professional knowledge base when their programs focus on several critical components reflected in the national teacher-preparation standards developed by the NMSA (2002). These include:

- an explicit focus on the unique intellectual, social, and emotional characteristics and needs of young adolescent learners;
- curricular attention to the philosophical foundations of the middle school, including emphasis on the integrative aspects of the middle school curriculum;
- developmentally appropriate courses in curriculum, instruction, and assessment with the opportunity to practice lesson design and delivery in multiple middle school settings;
- study of and practice in collaborative teaching models that incorporate colleagues as well as families and community members;
- intensive preparation to teach two or more teaching fields, with emphasis on broad and integrative fields over single disciplines (i.e. preparation to teach the social studies rather than solely history).

The dual content-area concentration requirement provides students with an in-depth teaching knowledge of two subjects. Thus, middle school teachers have two concentrations and are not only highly qualified but also versatile, offering prospective employers teachers with teaching flexibility, a mutually beneficial element for teachers and school administrators. Most importantly, of course, such teachers will be prepared to meet the instructional demands of the middle school situation. McEwin and colleagues contend that when teacher preparation programs neglect to emphasize these critical components, they are sending prospective teachers into middle school

classrooms without sufficient professional knowledge about their unique teaching contexts. They write, “the lack of specialized middle-level preparation and licensure has resulted in many thousands of young adolescents being taught by teachers who, at least initially, do not have the specialized knowledge, skills, and dispositions to be highly effective” (McEwin et al., 2003, p. 58).

In the interest of assessing the alignment of NMSA guidelines and the views of local school administrators, university faculty, and students, a survey was developed in the Spring of 2005 and distributed to various stakeholders. The survey solicited views on optimal student coursework and program structure for prospective middle school teachers (see appendix A). Four of the five sub-groups surveyed agreed with the optimal preparation consisting of two subject area concentrations, and all agreed that fieldwork should emphasize middle school placements, both findings representing clear agreement with NMSA guidelines. Findings from the survey also yielded valuable perspectives from local school administrators. Notable were the high levels of emphasis administrators placed on teaching reading and instructional technologies, and the relatively low emphasis afforded required coursework in the performing and visual arts and physical education. These data results offer additional opportunities to broaden the consideration of optimal program design by basing some design decisions on the needs of local schools.

Virginia Teacher Education Guidelines

Much of the flurry of discussion surrounding middle school teacher preparation as presented here, however, is predated by the Commonwealth of Virginia’s own forward vision of teacher education, beginning in the late nineteen

eighties. In an Ad Hoc Committee on Teacher Education, the Virginia Board of Education and the State Council of Higher Education of Virginia teamed up to study the teacher education issue. In their resulting “Guidelines for Restructuring Teacher Education,” the Ad Hoc Committee determined the following:

This degree should not be simply a traditional arts and sciences bachelor’s degree that includes a few education courses. The four-year curriculum for students preparing to teach should consist of the greatest number of courses in the arts and sciences which can be included feasibly and some specially developed education courses. Students earning a degree in an arts and sciences discipline should have an opportunity to meet the state requirements to be certified to teach. We recommend that Virginia’s approved program standards be revised to limit professional education course requirements to 18 semester hours. (Board of Education, 1987)

In accordance with the Virginia Board of Education’s charge, Longwood University faculty responded by creating and instituting a K-8 Liberal Studies program in 1992-1993. Longwood University faculty incorporated the Board of Education’s recommendations and regulations as well as those of NCATE to guide the program. Born out of the demonstrated need to incorporate more arts and sciences content courses into pre-service teacher education, the Liberal Studies program boasts an interdisciplinary program including course work from the arts and sciences as well as education. Students graduate from the College of Arts and Sciences rather than the College of Education and Human Services. All graduates are highly qualified under the No Child Left Behind Act

of 2001, holding a bachelor's degree with concentrations in two content-area subjects and meeting state education licensure requirement.

In 2003, the elementary and middle school liberal studies programs were separated in order to respond to the burgeoning research and available information regarding middle school education. The middle school program was developed in compliance with the Board of Education's regulations, NCATE and NMSA standards.

A Professional Education Council of faculty and administrators from the College of Education and Human Services and the College of Arts and Sciences guides policy for all teacher licensure programs. Further, faculty from both colleges comprise the Liberal Studies Advisory Committee, who, because of their participation and role in the program, oversee such elements as curriculum design. Finally, faculty from both colleges advise students under the guidance of the Assistant Dean of Arts and Sciences, who is also the Director of the Liberal Studies Program. Thus, the program is not only an interdisciplinary curriculum for students but also an interdisciplinary exercise for faculty. In this way, the cross disciplinary interaction that faculty enjoy in the governance and guidance of the program models the interdisciplinary focus the program requires in its curriculum.

Model Components

The Longwood University Liberal Studies Middle School Teacher Preparation Program has four components, *General Education*, the *Liberal Studies* major, *Pedagogy*, and *Field Experiences*. Each of the components plays a role in the development of effective practitioners. Each component is carefully constructed to prepare teacher candidates ready to help their students master the Virginia Standards of Learning.

Longwood's *General Education* program ensures that students in all majors experience liberal learning as a central part of their college studies. The program consists of 15 goals comprising 41 credit hours of both upper and lower level coursework, designed to develop disciplined, informed, and creative minds. Several of these goals have courses designated by the academic program. Liberal Studies majors must take SOCL 320 (Sociology of Education) for Goal 12 (study in hermeneutics in social sciences relevant to course of study), and PHIL 308 (Introduction to Ethics) for Goal 13 (ethical choices/decisions). In addition, specific coursework is recommended for several of the lower goals, including MATH 164 (Pre-Calculus) for Goal 5 (mathematical thought that focuses on specific content areas) and POSC 150 (American Government) for Goal 8 (forces shaping contemporary society). Designating specific courses to meet general education requirements allows the overlapping of courses required for the Liberal Studies major. Students can take 12 -16 credits of their major classes within general education, thereby shortening the overall curriculum by one semester, making a four year degree possible. (see appendix-B for detailed information on General Education Goals)

The *Liberal Studies Major* has been designed primarily for students seeking licensure to teach multiple subjects in Elementary, Middle, or Special Education. It provides a strong background in content areas such as Literature, Writing, Mathematics, Biology, Earth Science, History, Geography, and Government. Faculty from the College of Arts and Sciences have worked with Education Faculty to produce a major sequence of courses intended to develop broadly informed individuals who understand contemporary issues and will provide civic and professional leadership. The high level of cooperation between faculty from the College of Arts and Sciences and the College of Education and

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from coursework. Student teaching, in the senior year, features placements in the appropriate concentration areas.

The Model Curriculum is Guided by the Following:

The Virginia Standards of Learning—Faculty across the content-area disciplines have worked to develop coursework which reflects a close relationship with the Standards of Learning. The Math Department exemplifies the concerted effort necessary to restructure such a program to meet the needs of its students and service community. Consequently, their program evolution includes an Algebra I endorsement, a Liberal Studies Program Add-on for Mathematics, and a Stand-Alone Middle School Mathematics in Liberal Studies program. The design, changes, and implementation of each program were completed in the mathematics and computer science department. Mathematics faculty and mathematics education faculty inside the department worked together to create each program. In each case the programs were designed to meet the licensure requirements set forth by the Virginia Department of Education and prepare the student to teach the Virginia Standards of Learning for mathematics and the standards for teaching mathematics set forth by National Council for Teachers of Mathematics Principles and Standards for School Mathematics. (See appendix C for further description of this process).

Praxis II Assessment—Content-area coursework not only addresses the Standards of Learning but also reflect the standards set forth in Praxis II assessments. For example, in the middle school biology course (Biology 114) the focus is on appreciation of science and its relevance to everyday life, requiring students to practice higher order process skills such as synthesis and integration. The development of these skills in the science

content area will also encourage the teacher to develop these same skills in his or her own students. Basic biology content is covered using a focus-topic approach. For example, students learn about basic cell structure, cell membrane dynamics, cellular physiology, and epidemiology by studying cancer as a focus topic. After completing the unit, students are required to process the basic science content from the unit and link it to both specific Virginia SOL and the Praxis standards in science. The skills the students develop in taking responsibility for making connections and linkages between the college level content they receive in class and the specific requirements of the SOL will better prepare them for the content they will teach in the future.

Technology, Art, and Music-- To ensure that Longwood pre-service teachers are technologically prepared, all students are required to complete a series of on-line courses designed to ensure proficiency in major software applications. This series includes courses in Beginning Excel, Beginning Powerpoint, Intermediate Word, and Microsoft Explorer. In addition, Liberal Studies students take Education 484-Media and Computer Technology, a one-credit course that focuses on the opportunities for the integration of technology into the classroom, as well as the role of technology in learning. Technology is also incorporated into various content-area coursework. For example, biology students are required to engage in the study of that discipline through the use of the compound light microscope and the dissecting microscope. Students are also provided with experience in the use of direct projection microscopes, a technology they will experience in their future classroom. Math offers another example of technology use: graphing calculators are used regularly within that discipline's coursework. Other examples of technology use can easily be found in the other disciplines. Further, students use the

various hi-tech tools outfitted in many of our classrooms to deliver multi-media presentations per subject relevancy.

Longwood University integrated arts classes in art, music, and theatre, which are part of the program for elementary and special education liberal studies majors. Because middle school teachers teach specific content area subjects rather than the entire curriculum, coursework of this kind was not included as a requirement for the Liberal Studies Middle School Program. The earlier mentioned stakeholders' survey by Longwood University shows that this position is supported by all survey respondents who rated the importance of arts and music courses for all middle school teachers lower than they did any other content area. (See appendix C for further details.)

Special Education Considerations--Students completing the Liberal Studies Middle School program complete a 3 credit hour survey course of special education. The course provides future middle school teachers with the ability to identify the characteristics of persons with disabilities and provide appropriate accommodations and modifications for those children in the general education classroom. Students acquire basic information on legal issues and the special education process, focusing on the general education teacher's role in referral, eligibility, and Individualized Educational Program (IEP) development and implementation. Students leave the program qualified to serve as a special education team member, meeting the needs of children with disabilities in the general education classroom, in conjunction with the licensed special education teacher.

Governing Agencies—The Liberal Studies Middle School program is based on regulations from the following governing and accrediting agencies: Virginia Licensure

Regulations for School Personnel, July 1998; National Council for Accreditation of Teacher Education (NCATE); and National Middle School Association (NMSA).

No Child Left Behind Act of 2001—Graduates will be highly qualified, holding a bachelor's degree with concentrations in two content-area subjects and meeting state licensure requirements.

Conclusion

Recent research findings regarding middle school education suggest teacher preparation is a significant factor in middle school education success. Recognizing that middle school teachers teach specific content area subjects without the requisite in-depth preparation through concentrated study provided to them in their teacher education programs, Longwood University responded to that need, reiterated by middle school movement, and has created and developed a Middle-School-Only Teacher Education Licensure endorsement. Guided by the State Board of Education, NMSA, NCATE, SCHE, and other discipline specific governing agencies, Longwood offers an interdisciplinary program that boasts participation of faculty from both the College of Arts and Sciences and the College of Education and Human Services. The program is part of Longwood's continued effort to better prepare students for the teaching profession.

Highly-Qualified Interdisciplinary Curriculum Model for the Middle-School Teacher

Liberal Studies Major Requirements

Candidates for Middle School licensure must have concentrations in two of the following areas: English, Mathematics, Natural Sciences, and Social Sciences. They must also have a required minimum of courses in the areas in which they do not concentrate. The following lists requirements for candidates concentrating and not concentrating in each of the four areas.

English:

Concentrators: 12 credits

ENGL 350: Linguistics (3 credits)

ENGL 381: Young Adult Literature (3 credits)

ENGL 382: Traditional and Modern Grammar (3 credits)

ENGL 479: Writing: Theory and Practice for the Middle Classroom (3 credits)

Nonconcentrators: 3 credits

ENGL 350 or 382 or 479 (see immediately above for course titles)

Mathematics:

Concentrators: 18 credits

MATH 181: Finite Mathematics (3 credits)

MATH 309: Numeration Systems (3 credits)

MATH 310: Functions, Probability, and Statistics (3 credits)

MATH 313: Geometry and Reasoning (3 credits)

or MATH 335: Geometry (3 credits)

MATH 430: Teaching Middle School Mathematics (3 credits)

CMSC 121: Introduction to Computer Science (3 credits)

or CMSC 204: Introduction to Programming (3 credits)

MATH 164: Pre-Calculus (3 credits) *General Education Goal 5*

Nonconcentrators: 3 credits

MATH 164: Precalculus (3 credits) *General Education Goal 5*

MATH 310: Functions, Probability, and Statistics (3 credits)

Natural Sciences:

Concentrators: 11

BIOL 114: Fundamentals of Life Sciences (4 credits)

EASC 101: Physical Science (4 credits)

EASC 300: The Dynamic Planet (3 credits)

CHEM 101: (4 credits) *General Education GOAL 6*

Nonconcentrators: 7/8 credits

BIOL 114: Fundamentals of Life Sciences (4 credits)

EASC 101: Physical Science or

EASC 300: The Dynamic Planet (3 credits)

Social Sciences:

Concentrators: 15/18 credits

HIST 100 and 110: Western Civilization (3 credits in addition to Goal 7.)

POSC 150: American Government (3 credits) *Satisfies Goal 8.*

GEOG 241: Cultural Geography (3 credits)

OR

GEOG 352: World Regional (3 credits)

HIST 221: U.S. History to 1877 (3 credits)

HIST 222: U.S. History since 1877 (3 credits)

ECON 111 or ECON 115 (3 credits)

Nonconcentrators:

Six (6) credit hours beyond General Education from the list above.

Education Courses for Middle School (6 - 8) Licensure

EDUC 245 Human Growth and Development (3 credits)

EDUC 260 Introduction to Teaching Profession (2 credits)

*EDUC 299 Admission to Teacher Preparation (0 credits)

**EDUC 265 Practicum I (Summer after 1st year) (3 credits)

**EDUC 370 Practicum II (Summer after 2nd year) (3 credits)

EDUC 380 Classroom Assessment (2 credits)

EDUC 484 Media & Computer Technology (1 credit)

Partnership Semester (Junior Year)

EDUC 325 Introduction to Teaching Reading and Language Arts (2 credits)

EDUC 327 Teaching Reading and Language Arts in the Middle School Grades (2 credits)

EDUC 450 Principles of Instruction (2 credits)

EDUC 452 Curriculum in the Middle School (6-8) (2 credits)

EDUC 487 Classroom Management and System Issues (3 credits)

SPED 489 Survey of Exceptional Children (3 credits)

**** Professional Semester (Senior Year)**

EDUC 405: Directed Teaching in the Middle School (11 credits)

EDUC 488 Education Seminar (1 credit)

* Students must earn a "Pass" in EDUC 299 before they will be permitted to enroll in any subsequent 300-400 level Education course.

**Practica and student teaching (Education 405) will include placement in grades 6-8.

Note: Students must have at least a 2.5 GPA both in their Liberal Studies Major and overall to be eligible for student teaching placement. They must also be formally

admitted to the Teacher Education Program and have at least a “C” in ENGL 150, EDUC 260, and EDUC 245. To obtain licensure students must maintain a 2.75 GPA in the professional semester and achieve a passing score on Praxis I and II.

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Appendix A (Stakeholder's Survey)

Part I: Directions: Please rate level of agreement with the following items relating to student coursework and program structure in middle level teacher preparation.

Stakeholders: 1—School administrators; n=15
 2—College administrators; n=26
 3—Longwood CAS faculty; n=15
 4—Longwood CEHS faculty; n=11
 5—Longwood MS students; n=27

Description of Likert Scale: 5-Strongly agree; 4-agree; 3-neutral; 2-disagree; 1-strongly disagree

Note on statistical significance: ANOVAs run on data reveal significance at the $p < .05$ (*), $p < .01$ (**), and $p < .001$ (***) levels.

			1	2	3	4	5	Overall
1. The preparation of middle school core teachers should focus upon broad Liberal Arts coursework.*	MEAN ST.DEV	3.40 1.06	3.92 0.98	3.21 1.12	4.27 0.90	3.52 0.89	3.66 1.02	
2. The preparation of middle school core teachers should focus upon one subject area concentration.		2.53 0.99	3.19 1.27	3.13 0.92	2.64 1.12	2.63 1.24	2.85 1.16	
3. The preparation of middle school core teachers should focus upon two subject area concentrations.		3.93 1.16	3.88 1.11	3.80 1.01	4.36 0.81	3.93 0.87	3.95 1.00	
4. The preparation of ALL middle school core teachers should include coursework in English and/or Literature.**		4.33 0.98	4.52 0.65	3.73 1.16	4.73 0.47	3.81 0.88	4.18 0.92	
5. The preparation of ALL middle school core teachers should include coursework in Mathematics.***		3.93 0.88	4.15 0.78	3.50 1.16	4.73 0.47	3.33 0.92	3.85 0.98	
6. The preparation of ALL middle school core teachers should include coursework in the Physical Sciences.***		3.36 0.74	3.96 0.92	3.40 1.06	4.55 0.69	3.22 0.89	3.63 0.98	
7. The preparation of ALL middle school core teachers should include coursework in History.**		3.40 0.83	3.96 0.92	3.67 1.18	4.55 0.69	3.44 0.80	3.74 0.95	
8. The preparation of ALL middle school core teachers should include coursework in the Social Sciences.		3.40 0.74	3.85 0.92	3.57 1.16	4.18 1.08	3.41 0.84	3.65 0.95	
9. The preparation of ALL middle school core teachers should include coursework in art and theatre.**		2.40 0.63	3.27 1.04	2.67 1.11	3.55 1.21	2.81 0.79	2.94 1.00	
10. The preparation of All middle school core teachers should include coursework in music.**		2.40 0.63	3.23 0.99	2.67 1.11	3.45 1.21	2.70 0.67	2.88 0.96	
11. The preparation of ALL middle school core teachers should include coursework in physical education.*		2.27 0.59	3.04 0.92	2.27 0.96	3.09 1.38	2.54 0.71	2.66 0.94	
12. The preparation of ALL middle school core teachers should include coursework in <i>teaching</i> reading and/or reading in the content areas.***		4.67 0.49	4.73 0.53	3.33 1.05	4.64 0.67	4.27 0.72	4.35 0.84	
13. The preparation of ALL middle school core teachers should include coursework in <i>teaching</i> math.**		3.60 1.06	3.27 1.04	2.60 0.74	4.00 0.82	3.56 1.01	3.38 1.03	

14. The preparation of ALL middles school core teachers should include coursework in <i>teaching</i> science.*	3.07 0.88	3.19 1.10	2.60 0.74	3.90 0.88	3.41 1.01	3.22 1.01
15. The preparation of ALL middle school core teachers should include coursework in <i>teaching</i> social studies.*	3.00 0.93	3.19 1.06	2.67 0.82	3.90 0.88	3.41 0.93	3.22 0.99
16. The preparation of ALL middle school core teachers should include coursework in special education. ***	4.13 0.83	4.31 0.84	2.93 1.33	4.64 0.50	4.22 0.70	4.07 1.00
17. The preparation of ALL middle school core teachers should include coursework in gifted education. *	3.67 0.82	4.00 1.02	3.07 1.33	4.09 0.94	4.11 0.75	3.84 1.02
18. The preparation of ALL middle school core teachers should include coursework in instructional technologies.***	4.67 0.49	4.65 0.56	3.47 1.30	4.36 0.81	4.26 0.71	4.32 0.87
19. The preparation of ALL middle school core teachers should include emphasis on practicum placements	4.27 0.70	4.73 0.53	3.80 1.42	4.82 0.40	4.04 1.00	4.32 0.95
20. The preparation of ALL middle school core teachers should include an emphasis on practicum placements in a variety of K-12 settings.***	3.13 0.99	3.15 1.01	2.33 0.90	2.73 1.01	3.81 1.08	3.16 1.11

Appendix B

The Longwood University General Education Program—Goals and Course Requirements

The General Education Program

Goal 1 The development of citizen leaders for the common good by promoting critical thinking and analysis in all aspects of the students' lives and by developing the knowledge and skills that lead to college success (one credit).

Course: Longwood Seminar

Goal 2 The ability to write and speak logically, clearly, precisely, and the ability, through accurate reading and listening, to acquire, organize, present, and document information and ideas (three credits).

Course: English 150 Writing and Research

Goal 3. An understanding of our cultural heritage as revealed in literature, its movements and traditions, through reading, understanding, analyzing, and writing about the major works that have shaped our thinking and provide a record of human experience (three credits).

Courses: English 201 World Literature
English 202 British Literature
English 203 American Literature
Spanish 341 Survey of Spanish Literature I
Spanish 352 Survey of Spanish American Literature II
French 341 Survey of French Literature I
French 342 Survey of French Literature II
German 341 Survey of German Literature I
German 342 Survey of German Literature II

Goal 4 An understanding of our cultural heritage as expressed in artistic achievements and an understanding of the contribution of the creative process to the life of the individual and to society (three credits).

Courses: Art 121 Environmental Design Issues
Art 125 Introduction to Studio Art
Art 160 Introduction to the Visual Arts
Music 221 History of Jazz
Music 222 History of Rock
Music 224 Music Appreciation
Theater 101 Issues in Theatre

Goal 5 An understanding of mathematical thought and the ability to conceptualize and apply mathematical logic to problem solving (three credits).

Courses: Math 121 Functions and Graphs
Math 131 Mathematical Thinking
Math 171 Statistical Decision Making
Math 164 Precalculus

Goal 6 The application of the methods of science to the acquisition of knowledge, and an appreciation of the major contributions of science to our cultural heritage and to the solution of contemporary problems (four credits).

Courses: Biology 101 Biological Concepts and Applications
Chemistry 101 General Chemistry
Earth Science 210 Physical Geology
Physics 101 General Physics
General Education 261 Exploring Science in Our World

Goal 7 The exploration of the foundations and history of western civilization in order to use the past as a model for understanding the present (three credits).

Courses: History 100 Foundations of Western Civilization
History 110 Modern Western Civilization

Goal 8 An understanding of the forces shaping contemporary society as revealed in the social sciences (three credits).

Courses: Political Science 150 American Government and Politics

Goal 9 An understanding of the diversity of other cultures and societies (three credits).

Courses: Anthropology 101 Introduction to Anthropology
History 200 History of China
History 202 History of Islamic Civilizations
History 210 World History
Political Science 245 Gender and Politics
Political Science 255 Introduction to Comparative Politics
Religion 242 World Religions
Spanish 331 Latin American Civilization and Culture
Music 225 Introduction to World Music
Geography 220 Geography of South America

Goal 10 The ability to communicate and function in a globally interdependent world as developed through foreign language study (three credits).

Courses: Spanish 201 Intermediate Spanish I
French 201 Intermediate French I
German 201 Intermediate German I

Goal 11 An understanding of issues dealing with physical and mental well being through physical activity (two credits).

Courses: Physical Education 101 Fitness Concepts
Recreation 101 Fitness Concepts/Adaptive Activities

Goal 12 The development, through upper-level study in the humanities or the social sciences, of specialized knowledge and skills relevant to the student's broad course of study (three credits).

Course: Sociology 320 Sociology of Education

Goal 13 The ability to make informed, ethical choices and decisions and to weigh the consequences of those choices (three credits).

Course: Philosophy 308 Introduction to Ethics

Goal 14 The ability to synthesize and critically analyze through written discourse and a common educational experience information pertaining to issues of citizen leadership (three credits).

Course: English 400 Active Citizenship: An Advanced Writing Seminar

Goal 15 The application of knowledge and skills developed in the student's course of study through completion of an internship, guided field experience, or directed research (one credit).

Course: Upper level Education practicum

Appendix C

Program Development Example: Math

Creation of Algebra I endorsement

The algebra I add-on endorsement was created using the May 15, 1998 Licensure Regulations for School Personnel published by the Virginia Department of Education. To make the add-on endorsement as flexible as possible, math courses in the liberal studies major as well as math courses in the math major and minor were included. The goal was to recruit liberal studies majors (then K-8) and science majors (licensed 6-12) into the program. It was hoped that by including math courses that would count towards the minor, more science majors might be interested in the endorsement. The endorsement was added to the 2000-01 course catalog.

2000-01 Catalog description of Algebra I add-on endorsement

Students who are preparing to teach and who are majoring in fields other than mathematics may be endorsed to teach mathematics courses through Algebra I in grades 6 - 12 by taking the courses listed below.

MATH 164 Precalculus/3 credits
 MATH 181 Finite Mathematics/3 credits
or MATH 343 Linear Algebra/3 credits*
 MATH 261 The Differential and Integral Calculus/4 credits*
or MATH 267 Applications of Calculus/4 credits

Licensure Requirements	Longwood Course(s)
Elementary functions and college algebra	Math 164 Precalculus
Trigonometry	Math 164 Precalculus
Linear Algebra	Math 181 Finite Mathematics
Calculus	Math 261 Differential and Integral Calculus OR Math 267 Applications of Calculus
Euclidean Geometry	Math 313 Geometry and Reasoning OR Math 335 Advanced Euclidean Geometry
Probability or statistics or both	Math 310 Functions, Probability and Statistics
Discrete Math	Math 181 Finite Mathematics
Computer Science	CMSC 121 Introduction to Computer Science OR CMSC 204 Introduction to Programming

MATH 309 Numeration Systems/3 credits**
 MATH 310 Functions, Probability, and Statistics/3 credits**
 MATH 313 Geometry and Reasoning/3 credits**
or MATH 335 Advanced Euclidean Geometry/3 credits*
 MATH 451 Teaching of High School Mathematics/3 credits
 CMSC 121 Introduction to Computer Science/3 credits**
or CMSC 204 Introduction to Programming/3 credits*

TOTAL 25 credits

* denotes course counted towards math minor

** denotes course was part of liberal studies major

The licensure requirements at that time are listed below. Included are the Longwood courses that are equivalent.

The licensure requirements included 24 semester hours of coursework. For this reason we added Math 309 Numeration Systems. This course includes fractions, decimals, percents, and irrational numbers. Math 451 Teaching of High School Mathematics was also added to the program. This course includes methods and pedagogy used in the high school mathematics courses. The mathematics department believed these courses were important for the success of future Algebra I and eighth grade math teachers.

Creation of Liberal Studies Program add-on for Middle School Mathematics

In 1999, Longwood had to redesign its program because licensure in Virginia changed from K-8 to K-6 and 6-8. The Liberal Studies committee determined that Liberal Studies should become the K-6 program and each department would add courses for the 6-8 add on license. The change was added to the 2001-02 course catalog.

2000-01 Catalog description of Liberal Studies math portion

LIBERAL STUDIES MAJOR, B.A., B.S.

MATHEMATICS/9-12 credits

MATH Numeration Systems/3 credits
309

MATH Functions, Probability, and
310 Statistics/3 credits

MATH Geometry and Reasoning/3
313 credits

(CMSC 121 recommended for Goal 4 of General Education.)

ELECTIVE/three (3) credits from the following:

ART 341 Art Education/3 credits

ECON 115	Economics for Educators/3 credits
MATH/SCED 330	Integration of Mathematics and Science Principles/3 credits
MUSC 441	Music Methods/3 credits
THEA 250	Creative Dramatics for the Classroom/3 credits
MOLA 202	(French, German, Spanish)/3 credits (for B.A. degree)

Middle School Endorsement Requirements

Students wishing an endorsement to teach at the middle school level, grades 6-8, must complete in addition to the Liberal Studies courses above and the 40 credit education component below, designated courses in at least **two** areas. Those areas and the specified courses are:

Mathematics

MATH 164	Precalculus/3 credits
Or	
MATH 261	Differential and Integral Calculus/5 credits
MATH 181	Finite Mathematics/3 credits
MATH 451	Teaching of High School Mathematics/3 credits
(Can be counted as the approved electives in liberal studies major)	

These mathematics courses for the middle school add-on in mathematics were chosen because they provided the mathematics content knowledge for future middle school teachers and they were already in the algebra I add-on program. Math 181 was chosen because it contained consumer mathematics needed for the computation and estimation strand for grades 6-8. Math 164 or 261 was chosen because it contained the function and algebra mathematical background needed for the patterns, functions, and algebra strand for grades 6-8. Math 451 was chosen because it included pedagogy and methods for mathematics that were not covered in the education pedagogy courses. The mathematics department believed these courses were important for the success of future middle school math teachers.

Creation of Stand Alone Liberal Studies Middle School Mathematics Program

In 2002, the mathematics department initiated discussion about a middle school stand alone program. Each year several students enter Longwood University with the intention of majoring in mathematics and teaching high school mathematics only to change their major after completing their freshman year. These students would be ideal candidates for the middle school Liberal Studies major. Unfortunately, the requirements for the liberal studies had so many credits that changing a major to liberal studies after the first year would add 1-2 extra semesters to the student's college course work. The department hoped that by having a stand-alone, more of these students would teach mathematics. The middle school liberal studies stand along program began in 2003.

2003-04 Catalog description of Liberal Studies Math Middle School Program

LIBERAL STUDIES MAJOR, B.A., B.S.

LIBERAL STUDIES MAJOR, MIDDLE SCHOOL ENDORSEMENT ONLY (Grades 6-8: Two subjects)/36-44 credits

Candidates for Middle School licensure only must have concentrations in two of the following areas: English, Mathematics, Natural Sciences, and Social Sciences. They must also have a required minimum of courses in the areas in which they do not concentrate. The following lists requirements for candidates concentrating and not concentrating in each of the four areas:

MATHEMATICS:

CONCENTRATORS/18 credits	
MATH181	Finite Mathematics/3credits
MATH 309	Numeration Systems/3 credits
MATH 310	Functions, Probability, and Statistics/3 credits
MATH 313	Geometry and Reasoning/3 credits
OR MATH 335	Geometry/3 credits
MATH 451	Teaching Mathematics
CMSC 121	Introduction to Computer Science/3credits
OR CMSC 204	Introduction to Programming/3 credits

MATH 164	Precalculus/3 credits (Satisfies General Education Goal 5)
NONCONCENTRATORS/6 credits (includes 3 General Education)	
MATH 164	Precalculus/3 credits (Satisfies General Education Goal 5)
MATH 310	Functions, Probability, and Statistics/3 credits

The mathematics department chose these courses because of their compatibility to the existing Algebra I add-on endorsement and the existing Liberal Studies major. CMSC 121 or 204 was added to address the use of technology in middle school math classrooms. Students can add an Algebra I endorsement by taking Calculus.